Claims

1. A microfibrillated article comprising an oriented aliphatic polyester film having a microfibrillated surface comprising microfibers of average effective diameter of 10 micrometers or less.

2. The microfibrillated article of claim 1, wherein said microfibers have a transverse aspect ratio of from 1.5:1 to 20:1.

3. The microfibers of claim 1 having a cross-sectional area of 0.05 μ^2 to 3.0 μ^2.

4. The microfibers of claim 1 having a cross-sectional area of 0.1 μ^2 to 2.0 μ^2.

5. The microfibers of claim 1 having a surface area of at least 0.25 m^2/gram.

6. The microfibers of claim 1 comprising bundles of unitary microfibrils.

7. The microfibers of claim 1 wherein said aliphatic polyester comprises a homo- and copolymers of poly(hydroxyalkanoate).

8. The microfibers of claim 1 wherein said aliphatic polyester is derived from the reaction product of one or more alkanediols with one or more alkanedicarboxylic acids.

9. The microfibers of claim 9 wherein said aliphatic polyester is selected from polybutylenesuccinate homopolymer, polybutylene adipate homopolmer, polybutyleneadipate-succinate copolymer, polyethylenesuccinate-adipate copolymer, and polyethylene adipate homopolymer.

10. The microfibers of claim 8 wherein said poly(hydroxyalkanoate)is selected from the group consisting of polylactide, polydioxanone, polycaprolactone, poly(3-

hydroxybutyrate), poly(3-hydroxyvalerate), polyglycolide and poly(oxyethylene glycolate).

11. The microfibers of claim 1 comprising a blend of two or more aliphatic polyesters.

12. The microfibers of claim 1, wherein said microfibers are bioabsorbable.

13. The microfibers of claim 1, wherein said microfibers are biodegradable.

14. The microfibrillated article of claim 1, wherein said microfibrillated article comprises a film having at least one microfibrillated surface.

15. The microfibrillated article of claim 1, wherein said microfibrillated article comprises a film having two microfibrillated surfaces.

16. The microfibrillated article of claim 1, wherein said microfibrillated article comprises a film having a microfibrillated morphology through the thickness of the film.

17. The microfibrillated article of claim 1 having a depth of microfibrillation of 10 microns or greater.

18. A process for preparing the microfibrillated article of claim 1 comprising the steps of:

(a) providing an aliphatic polyester film;

(b) stretching said film to impart a microvoided and microfibrillar morphology thereto; and

(c) microfibrillating said film by imparting sufficient fluid energy thereto.

19. The process of claim 18 wherein fluid energy is imparted with a high-pressure fluid.

20. The process of claim 18 wherein said step of microfibrillating comprises subjecting said film to cavitation energy while immersed in a fluid.

21. The process of claim 18 wherein said step of microfibrillating comprises contacting the film with one or more high-pressure fluid jets.

22. The process of claim 18 wherein said highly oriented polymer film is prepared by the steps of

(a) extruding a melt-processible aliphatic polyester;

(b) casting said polyester so as form a substantially amorphous film.

23. The process of claim 18 wherein said stretching imposes a stress on said film, wherein said stretching is performed under conditions of plastic flow exceeding the ability of said film to conform to said imposed strain.

24. The process of claim 18 wherein said polymer is stretched at a total draw ratio of greater than 6:1 to produce a highly oriented film having a plurality of microvoids.

25. The process of claim 18 wherein said aliphatic polyester film comprises void-initiating particles dispersed in the film.

26. The process of claim 18 wherein said film is oriented to a total draw ratio of greater than 6:1.

27. The process of claim 18 wherein said film is length oriented greater than 6:1 and transversely oriented less than 2:1.

28. The process of claim 18 wherein said film is sequentially oriented at a first temperature above the T_g of the aliphatic polyester and then stretched at a second temperature at least 20°C above that of the first temperature.

29. The process of claim 28 wherein said film is sequentially oriented at a first draw ratio of 4:1 to 6:1 and then a second draw ratio of 1.5:1 to 3:1.